G.—Transverse Strain on a simple Rectangular Cast-iron Beam, treble width of A weighted vertically.—All else relating to it, similar.

No. 18 Experiment. Weight, 138 cn.		No. 19 Experiment. Weight, 140 cn.		No. 20 Experiment. Weight, 141½ cn.		No. 21. Experiment. Weight, 142 cn.	
Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.
820	·029	820	·035	820	·042	820	·040
988	·038	988	·041	988	·046	988	·047
1156	·043	1156	·046	1156	·053	1156	·053
1324	·052	1324	·053	1324	·059	1324	·058
1492	·058	1492	·061	1492	·067	1492	·063
1660	·066	1660	·066	1660	·072	1660	·069
1828	·074	1828	·072	1828	·078	1828	·076
1996	·081	1996	·081	1996	·084	1996	·083
2164	·088	2164	·086	2164	·092	2164	·09
2332	·094	2332	·091	2332	·097	2332	·097
2500	·101	2500	·097	2500	·102	2500	·104
2688	·109	2688	·105	2688	·108	2688	·112
2812	·115	2812	·109	2812	·112	2812	·118
2956	·12	2956	·114	2956	·117	2956	·124
3100	·125	3094	·119	3094	·121	3094	·132*
3238	·13	3232	·124	3232	·126		
3364	·135	3358	·129	3358	·13		
3490	·139	3484	·134*	3184	·134		
3616	·145	3610		3610	·138		
		3736		3736	·141*		

* Broke.

Exp. 16.—Very sound.
Exp. 18.—Cast on the flat; four air bubbles.
Exp. 20.—This beam sustained the weight 1½ minutes very sound.
Exp. 21.—Air bubble at the lower edge; diminishing the width 1-8th at that particular spot.

H.—Transverse Strain on Two simple Rectangular Cast-iron Beams, each double the width of A, and placed side by side, same as C.

All else relating to it, similar.

No. 22 Experiment. Weight of 1 Beam, 104 cn. / Weight of 1 Beam, 104 cn. } 208 cn.

Pressure in lbs	Deflection in ins.	Pressure in lbs	Deflection in ins.
976	·005	3328	·072
1312	·012	3496	·076
1648	·022	3664	·091
1984	·032	3832	·091*
2320	·042	4000	·094
2656	·052	4168	·097
2992	·062	4336	·101†
3160	·068		

* A jar in the lever made no difference from the previous deflection.
† Broke.—Unsound casting; in one a very large air bubble.

I.—Transverse Strain on Two simple Rectangular Beams, cast in one casting; 1½ inch apart, connected by cross-tie pieces at each end, and two intermediate, dividing its length into three equal divisions.

No. 1 Experiment. Weight, 139 cn.		No. 2 Experiment. Weight, 139 cn.		No. 3 Experiment. Weight, 138 cn.		No. 4 Experiment. Weight, 139 cn.	
Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.
220		220		220	·007	220	
310		352	·004	310	·012	313	
400	·002	442	·0075	403	·017	403	·004
484	·006	535	·01	493	·023	493	·004
574	·011	613	·018	580	·026	625	·01
664	·015	694	·023	673	·032	703	·013
751	·02	787	·026	760	·035	784	·018
848	·025	877		850	·039	870	·024
929	·03	982		928	·042	964	·0275
1016	·033	1068	·032	1012	·046	1049	·033
1139	·038	1149	·033	1105	·05	1134	·036
1208	·042	1233		1183	·053	1230	·042
1380	·044	1320		1270	·058	1302	·046
1473	·05	1113		1348	·061	‡1380	·054
1567	·055	1548		1426	·065	1458	·056
1639	·059	1626		1501	·068	1537	·061
1717	·063	1711		1591	·071	1627	·066
1810	·068	1789		1684	·075	1748	·073
1888	·073	1875		1771	·078	1841	·078
1981	·078	1965		1849	·082	1930	·083
2062	·084	2049		1954	·087	2016	·09
2140	·088	2118		2074	·093	§2121	·093
2205	·094	2190		2196	·099	2211	·098
2271	·096	2259		2265	·103	2291	·103
2339	·1	2337		2352	·107	2369	·107
2415	·102	2423		2424	·11	2441	·111
2481	·106	2492		2503	·113	2510	·116
2559	·11	2561		2569	·116	2576	·118
2629	·115	2630		2635	·12	2642	·122
2715	·12	2696		2701	†	2705	*
2778	·126	2762					
2844	·128	2830					
2907	·128	2896	*				
2970	*						

The deflector did not act, the remainder of the experiment.

* Broke apart.
† Broke.
‡ Weights put on carelessly.
§ Two small cracks.

J.—Transverse Strain on Two simple Rectangular Beams cast in one casting, connected by cross ties, &c., same as Experiment I., but trussed as per sketch annexed, or the Direct Truss.

No. 5 Experiment Wt. 138 cn.		No. 6 Experiment Wt. 139 cn.		No. 7 Experiment Wt. 137 cn.		No. 8 Experiment Wt. 137 cn.		No. 9* Experiment Wt. 140 cn.	
Pres. in lbs.	Def. in ins.	Pres. in lbs.	Def. in ins.	Pres. in lbs.	Def. in ins.	Pres. in lbs.	Def. in ins.	Pres. in lbs.	Def. in ins.
220		220	·005	220		220	·01	220	·005
352	·005	310	·004	310	·001	310	·012	313	·007
436	·01	403	·012	403	·0015	400	·017	393	·013
529	·014	493	·015	484	·0025	490	·024	496	·016
622	·0175	583	·018	574	·006	577	·027	579	·021
712	·0225	676	·022	661	·009	667	·032	653	·025
796	·027	763	·026	748	·012	760	·035	735	·029
881	·031	850	·03	827	·016	847	·038	822	·033
982	·032	937	·033	905	·021	934	·042	909	·037
1065	·032	1024	·037	984	·024	1027	·047	999	·041
1155	·032	1108	·04	1067	·029	1117	·051	1085	·045
1242	·032	1186	·043	1085	·033	1207	·055	1166	·049
1322	·032	1262	·046	1174	·037	1285	·059	1252	·052
1407	·038	1345	·05	1258	·041	1365	·063	1330†	·056
1484	·039	1417	·053	1373	·045	1441	·067	1418	·059
1556		1513	·056	1460	·049	1539	·07	1497	·064
1622		1600	·059	1553	·053	1615	·073	1576	·068
1705		1705	·063	1640	·057	1706	·076	1664	·072
1792		1783	·067	1719	·062	1810	·08	1699	·074
1882		1903	·069	1798	·064	1949	·083	1777	·078
1960		2026	·074	1864	·069	2069	·087	1867	·082
2041		2104	·074	1952	·071	2189	·092	1957	·084
2127		2197	·08	2042	·075	2225	·093	2020	·086
2200		2283	·084	2165	·08	2334	·095	2086	·089
2325		2361	·087	2234	·083	2402	·098	2189	·095
2403		2439*	·09	2304	·086	2468	·099	2181	·098
2469		2499	·093	2371	·088	2534	·103	2239	·102
2538*		2565	·096	2449	·091	2600	·107	2329	·105
2604		2633	·099	2515	·094	2705	·112	2395	·108
2673		2701	·102	2581	·096	2771	·114	2464	·111
2745		2765	·105	2649	·099	2837	·117	2536	·116
2808		2836	·109	2715	·102	2921	·121	2602	·118
2901		2908	·11	2781	·104	2984	·124	2658	·121
2971		2971 Broke and not the bolt.		2847 Broke.		3063	·127	2737	·124
3140						3139	·13	2806	·127
Broke.						3195	·134	2872	·129
						3251 Broke.		2936	·133
								3002	·136
								3056 Broke	·139

The deflector did not act.

When all unloaded the needle stood at 22.

* A crick one minute after loading.
† Unloaded to springing.
‡ Remained a quarter of an hour.

K.—Transverse Strain on Two simple Rectangular Beams, cast in one casting, 1½ inch apart, connected by cross ties, &c., same as Experiment I, but trussed as per sketch annexed, or from *two points*.

The strain taken *within* the line of compression; the pressure applied in the same way, &c.; bearings similar.

No. 9 Experiment. Weight, 138 cn.		No. 10 Experiment. Weight, 138 cn.		No. 11 Experiment. Weight, 138 cn.	
Pressure in lbs.	Deflection.	Pressure in lbs.	Deflection.	Pressure in lbs.	Deflection.
*220	·01	220	·012	220	·01
313	·015	313	·018	313	·013
403	·018	403	·024	403	·017
490	·021	493	·028	493	·022
567	·025	598	·033	580	·025
657	·028	691	·037	673	·028
744	·032	†784	·04	760	·031
†834	·035	874	·044	847	·035
924	·038	961	·048	934	·038
1014	·042	§1048	·052	1054	·043
1119	·045	1135	·055	1174	·048
1197	·048	1222	·059	1267	·052
1317	·053	1309	·062	1372	·056
1437	·056	1396	·065	1450	·057
1509	·06	1480	·068	1522	·06
1602	·063	1561	·072	1594	·063
1677	·067	1642	·075	1684	·067
1764	·068	1720	·078	1771	·07
1842	·073	1798	·083	1858	·072
1926	·077	1876	·086	1942	·076
2004	·08	1954	·09	2023	·081
2082	·084	2026	·093	2101	·085
2166	·088	2146	·099	2179	·088
2247	·093	2229	·104	2257	·092
2325	·097	2301	·108	2338	·097
2394	·1	2370	·112	2409	·1
2472	·104	2439	·113	2497	·104
2538	·107	2520	·118	2563	·107
2604	·11	2586	·121	2629	·11
2670	·114	2655	·123	2695	·114
2736	·117	2725	·127	2761	·117
2802	·119	2791	Broke.	2827	·12
2868	Broke.			2893	·123
				2959	·125
				3025	·128
				3091	·132
				3154	·135
				3217	·138
				3283	·14
				3319	·143
				3415	Broke.

* When all released off except the lever and scale, the tetanus bolt holding up the broken beam, the deflector showed ·03.
† When the scale was unloaded to this point, the lever was free from the prop on which it fell, after fracture of the beam, and the deflector showed ·01.
‡ Bolt carried after fracture.
§ Left for ten minutes. The lever at fracture fell only 1 inch, not breaking the bolt. When all unloaded, the bolt sustained a deflection of ·05.

Drury-lane. GEORGE B. COOPER.

LINCOLN CATHEDRAL AND THE SHOWMAN.

"Art gives us nobler loves and nobler cares; furnishes objects by the contemplation of which we are taught and exalted, and so are ultimately led to seek beauty in its highest form, which is Goodness."

SIR,—It was with a mind fully cogitating on the sentiment which I have just quoted, and to which my attention was called by THE BUILDER of the 6th ult., that I approached the west front of Lincoln Minster; and, as I stood before the glorious pile, first observing the grandeur of the mass, and then attending to the exquisite finish of each shapely stone,—finish surpassed only by Nature, the "mistress of the art,"—it seemed to me more like an efflorescence of the natural rock than any embodiment of man's imagination. "Yes," I exclaimed, "art shows us man as he can be known by no other means." These words were still upon my lips, and I stood within the building, and even then the pealing anthem seemed to say the same, and with a voice well worthy such a building.

But, sir, let me call your attention from the cathedral to its officers, the verger and his sub-official, and to inform you—if, indeed you are not too well aware—what kind of reception you are to expect when you next make a pilgrimage to Lincoln Cathedral. After the morning service, and while several persons as well as myself were lingering in the nave, a large man, whose black dress and red face proclaimed his official character, inquired of me, "Do you wish to see the cathedral?"—to which I replied, "No; I have not time at present." In a few minutes he returned and told me he wished to lock the doors, and that I must go away; and, on my quietly telling him there were still many people in the cathedral, and that he could not lock them in, he said,—"You must not tell me my business, sir; I am doing my duty."

On the next day I repeated my visit, and after service the verger found a party of visitors, upon whom he forced his services as showman of the cathedral. Whilst he was thus busy I hoped quietly to enjoy the use of my sight, without the interposition of him, whose very proximity seemed to destroy my pleasure; but, no sooner had I commenced a serious examination, casting off the awe and distraction of such a multiplicity of images, than a beautifully-imagined piece of foliage required my sketch-book; and, so busy was I in my occupation, that I heard not the verger's approaching footstep, till he stood suddenly before me. "Do you belong to this party, sir?" "No."—"How did you get in, sir?" "I shall not answer."—"Have you permission to sketch, sir?" "No." "Then I cannot allow it; I must do my duty."

Truly, Mr. Editor, this *is* a rotten state of things, and the people of England are wrong in thinking that exclusive dealing has become matter of history, or that "the insolence of office" is a tale of bygone days. It may be that I feel too strongly on the subject, from the unexpectedness with which it assailed me, having been introduced to no English cathedral before, except through the pages of Britton and Pugin, and having seen nothing of the matter there; and as Sterne would have told you, "they manage these things better in France."

Are the people careless of being denuded of their birthright? Do they not know that they have but to ask and receive? Is it too much to require a free inspection for all classes of monuments left to *them* by their ancestors? I hope, Mr. Editor, that you will insert the above plain narration, and the questions which seem honestly to arise from it; for I think you will agree with me, that if reform ever was needed, it is needed here; and I should rejoice if the possessors of our high Protestant places would but emulate a tithe of the liberality which the Pope of Rome has lately exhibited; we should then have no further cause of complaint. It may be serviceable to state that before I left Lincoln I restored the verger's equanimity by permitting him to "show" the cathedral, and by purchasing of him a few plaster casts which he keeps for the accommodation of those who have not "permission to sketch," and yet who wish to preserve a memento of the cathedral.—I am, Sir, &c.

Dec. 7, 1847. AN AMATEUR.

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